



MISSOURI  
AMERICAN WATER

## Twenty Minutes in May...One Year Later Joplin, Missouri





## Joplin Water System Overview

- **Serve 24,160 customers, approximately 54,000 people**
- **Water Sources: Shoal Creek plus 9 wells**
- **500 Miles of Water Mains**
- **Six Storage Facilities and Five Boosters/Pump Stations**
- **32 full-time employees with an average 11 years of service**



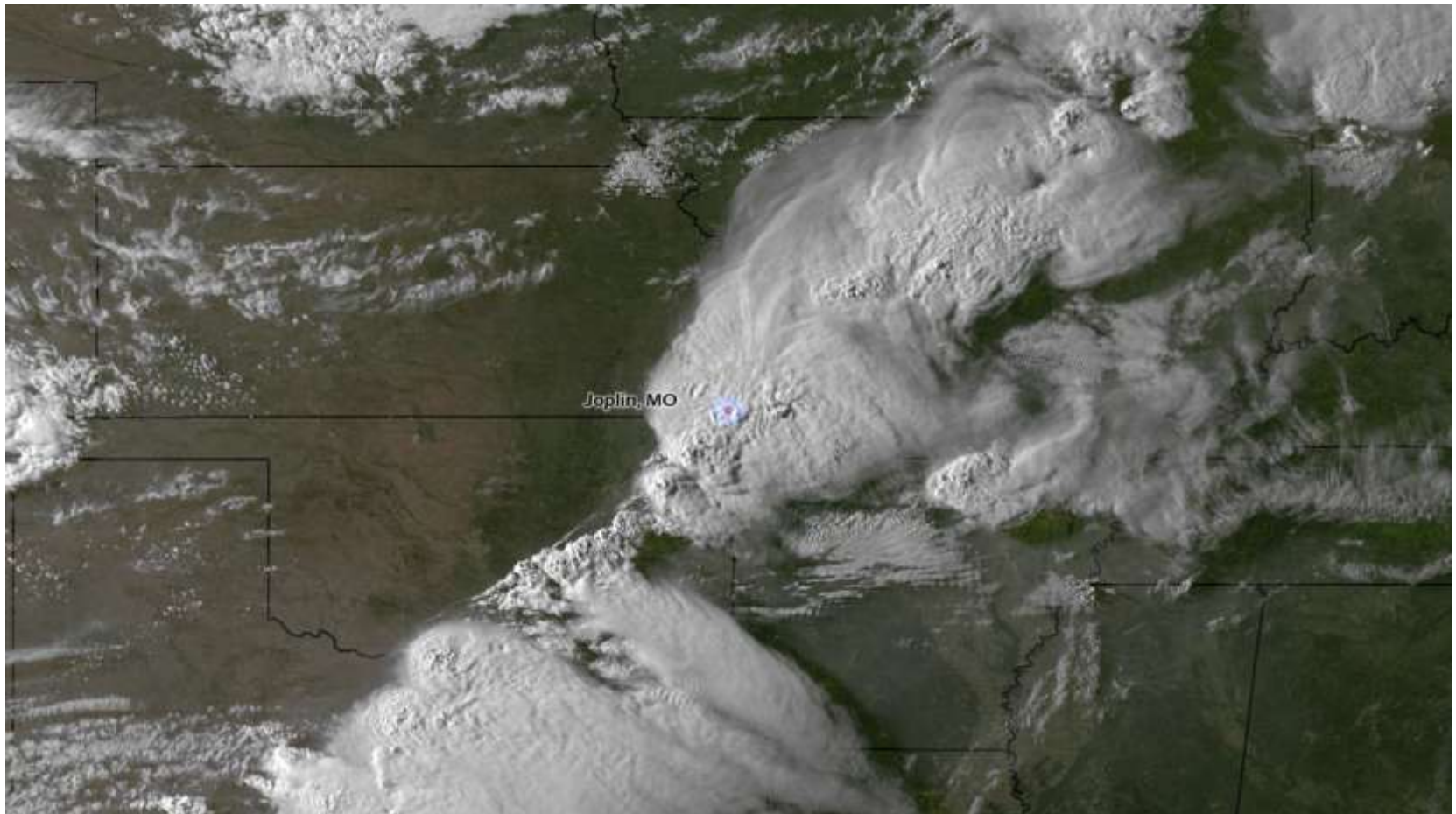
## May 22, 2011

- The EF-5 tornado was one-half to three-quarters of a mile wide and traveled about 13 miles
- Winds estimated at 200 mph plus
- Tornado remained on the ground for 20 minutes
- Lives lost 161, over 1000 reported injuries





## Satellite Image of Storm System



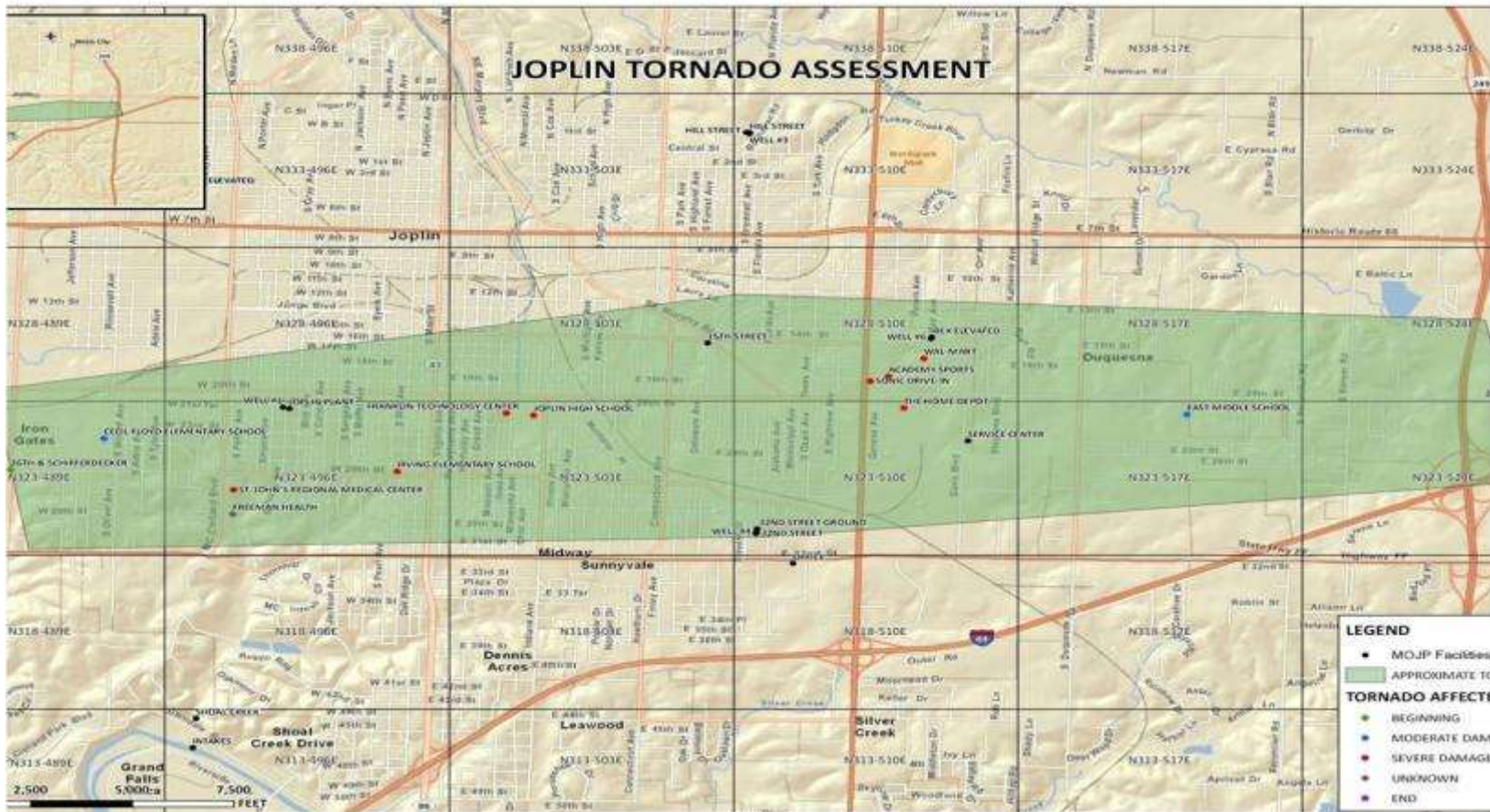
## A Community Devastated

- 7,500 residential dwellings destroyed or damaged
- 9,000 People displaced, 17,000 affected
- 500 businesses destroyed or damaged, 5,000 employees affected (of these, almost 3,000 were kept on the payroll in some capacity)
- Nearly 3 million cubic yards of residential debris throughout disaster area
- Monetary damages over \$3 billion





# Tornado Path



## Immediate Operational Challenges



- Immediate pressure decrease
- Two elevated storage show pressure drops in ten minutes. Empty in less than two hours after storm
- Damage to facilities ranging from minor to severe
- Plant operated on generator power for 1.5 days



## Restoring the Distribution System

- 4,000 leaking customer service lines
- 25 torn fire service lines
- System pressure impossible to maintain, boil advisory issued
- Detection of zero pressure, advisory becomes boil order in conjunction with Missouri Department of Natural Resources
- Redirected flow around affected area to restore pressure



## Re-establishing Pressure

- Following main shut-downs, pressure resumes in area not impacted
- Main breaks and service line repairs prioritized in impacted area
- Crews went block-to-block opening valves, putting mains back in service and shutting off individual service lines.
- Impacted area regained fire protection



## Missouri American Water Operations Recovery

- Entire water system restored in 5.5 days
- Of the approximately 4,000 residential services deactivated, 2,000 have been restored. (customer recovery rate of 50 percent)
- Thirty-nine fire line services have been installed





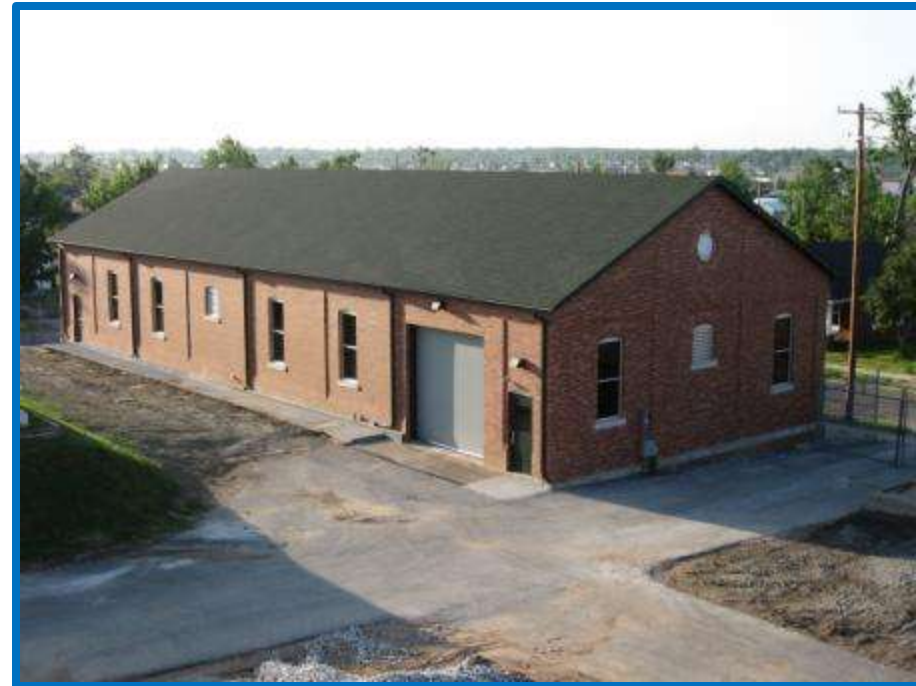
## Ensuring Water Quality

- Simultaneously began flushing the entire system
- Full pressure in entire system restored in two days
- Boil order lifted in 5.5 days after flushing and sampling are completed
- Equipment and manpower assistance from Missouri American Water operations in St. Louis and St. Charles Counties, Warrensburg, St. Joseph and Jefferson City



## Plant Storage Building

- Rebuilt to historical district building code requirements



## Joplin Operations Service Center



To be completed in May 2012.





## Summary

- **Complete water system restoration in 5.5 days**
- **Sixty employees worked 12 and 14 hour shifts for 3 weeks following tornado**
- **Redirected flow around the area to stabilize system pressure**
- **Entire system flushed in 3 days – operating 1,800 hydrants**
- **Ongoing heavy workload due to:**
  - Water line mark-outs
  - Demolition permits – required for demolition and debris removal activities
  - Water main repairs
  - Fire hydrant strikes during removal of debris
  - Service line and meter damage during event and during removal of debris

## Emergency Preparedness – before the crisis

- History of working emergency response plans regularly
- Strong relationships with emergency response agencies
- Establish and maintain a broad network of emergency resources
- **Emergency plan should include:**
  - Human resources to help restore service
  - Relationships and contracts with critical vendors from outside the area
    - Generators
    - Fuel
    - Equipment



## Lessons Learned

- **Communication systems are critical**
  - Internal -- connecting quickly with employees
  - External operations
    - Coordinate with Emergency Operations Center - designate one point of contact
    - Badges and uniforms are essential to access
  - Customers
    - Radio was the key resource
    - Social media – news on Facebook
- **Secure logistics for emergency workers immediately**
- **Deploy resources from outside the affected area**
- **Technology cannot be depended on**
- **Debriefing is vital**



## Immediate Community Support



- **Special billing practices for customers in impacted area**
- **Streamlined process created for demolition permits**
- **Activation fee waived for impacted area**
- **Participating in steering committee for planning Joplin's future**

## New Beginnings Program

- Employees throughout the American Water Family raised \$63,500 in just four weeks
- Funds raised went to the Joplin School District, Economic Security and the Red Cross
- Pre-existing partnership with school district led to highly focused approach for assistance, including school supply donations



## Rebuilding...One Day at a Time

- Building permits issued for almost two-thirds of the 7,500 homes that were damaged
- Currently 420 of the 530 affected businesses have reopened. Only 28 have indicated they will not rebuild/reopen
- Twenty-eight new businesses have opened
- To date, approximately 376 individuals and families are living in temporary housing units provided by FEMA. At the peak, FEMA units housed 586





## Rebuilding Continued

- The U.S. Small Business Administration has provided over \$40.3 million in low-interest disaster loans to small businesses (over 85% of Joplin Chamber businesses are classified as small business)
- More than \$20.8 million in grants approved in Jasper and Newton Counties for home repairs, temporary housing or other critical needs
- Sales tax collections up 14 percent over fiscal year 2011



## Joplin School District Looking to Future

- Operation Rising Eagle Phase 1 Complete – 2011-2012 school year begins on time
- Enrollment down 5 percent for 2011-2012
- Operation Rising Eagle continues as school facilities rebuild.
- Estimated rebuild cost of \$185 million
- Estimated insurance, government funding and donations \$123 million – bond issue needed to fill gap
- \$62 million bond issue passed on April 3 by less than 1 percent
- National media continues to focus on school events
- President Barack Obama delivered high school graduation commencement address on May 20, 2012

## What is “Back to Normal?”

- Immediately following the storm, water line locates averaged 150 per day (normal range is 30 to 40)
  - Current average is 85
- Most meter pits damaged during debris removal. Replacement was done utilizing outside contractor. Approximately 4,000 meter pits to be replaced
- Community as a whole suffering disaster fatigue



## Partner in Rebuilding

- **Active member of**
  - Citizens Steering Committee charting future course for Joplin, specifically area of impact
  - Bright Futures
  - Wildcat Glades Conservation and Audubon Center
- **Partnering with the city of Joplin to update and address infrastructure needs**





# Missouri American Water Serving the Joplin Metro Area Proudly for Over 120 years

*Committed to rebuilding our community...one day at a time*

